

***The Institution of Engineers, Australia; Sydney Division  
Engineering Heritage Committee***

***Oral History Program: Biographical Notes***

**Dr. Peter George Alfredson (1938 - )  
Chemical Engineer**

**Birth and Family:** Peter George Alfredson was born on the 16<sup>th</sup> of March 1938, to F.G. Alfredson. He was born in Childers, Brisbane and has two younger twin brothers. At the time of his birth his parents owned a grocery store and the family were members of the Uniting Church. Peter is now married with three children and five grandchildren. (*The Childers I know is a small sugar town near Bundaberg. Is there also a Childers in Brisbane?*)

**Schooling:** Local Primary School  
Childers State High School – Junior High School exam, 8 A level passes  
Brisbane Senior State High School

**Qualifications:** One of two scholarships in Chemical Engineering from the Australian Atomic Energy Commission (AAEC)  
1955 – 1959 BScApp (Hons 1) in Industrial Chemistry (University of Queensland)  
1960 BE (Hons 1) in Chemical Engineering (University of Queensland)  
1962 – 1964 MSc in Chemical Engineering (University of New South Wales)  
1968 – 1972 PhD in Chemical Engineering (University of New South Wales) – topic: pulsed fluoridation.  
Advanced Management Course, Australian Administration Staff College, Mt Eliza, 1980.  
Management of Research, Development and Technology- Based Innovation, Massachusetts Institute of Technology, Cambridge, 1987.

**Memberships:** NSW Group Committee, Institution of Chemical Engineering (Treasurer 1973 – 1975, Chairman 1975 – 1977)  
National Committee on Fuels and Energy, Institute of Engineers Australia (1979 – 1982)  
Chairman of the Visiting Committee for the school of Chemical

Engineering and Industrial Chemistry (1984 – 1994)

Member of Council, Australian Institute of Nuclear Science and Engineering (1982 – 1990)

Chemical Engineering Branch Committee, Sydney Division, Institute of Engineers Australia (Secretary 1983, Chairman 1984) (1983 – 1991)

Board of College of Chemical Engineering, Australia (Deputy Chairman 1985, Chairman 1986/7) (1983 – 1989)

DITAC Laser Photochemistry Project Steering Committee (1984 – 1987)

Prime Minister's Ecologically Sustainable Development Group on Energy Production (1990 – 1992)

Research Advisory Committee for New South Wales Office of Energy (1990 – 1994) and for Pacific Power (1992 – 1994)

Research Advisory Committee, Cooperative Research Center for Mining Technology and Equipment (1993 – 1994)

**Awards:**

Fellow, Institute of Engineers, Australia

Fellow, Australian Institute of Energy

Chartered Professional Engineer (Australia)

**Work History:**

In 1961, Peter became an Experimental Officer for the Australian Atomic Energy Commission (AAEC), working at Lucas Heights in Sydney. Most of the research done here at this time was concerned with gas- cooled nuclear reactors while most overseas reactors were water- cooled. With the discovery of natural gas, the expectation for nuclear power reactors to be built in South Australia came to an end and after a review of the Australian Atomic Energy Program in the 1960's; it was decided to stop work on advanced gas-reactor systems and to begin planning for the introduction of water-cooled reactors. Peter was involved in assessing suggestions for the construction of one such reactor in Jervis Bay.

Following the discovery of uranium deposits in Australia, Peter became involved in chemical engineering studies on the waste implications of uranium mining on the environment as well as the process of producing uranium fuels. After the plans for gas-cooled reactors were 'shelved,' Peter's research at AAEC was terminated. He was selected as a 'guest scientist' at the Argonne National Laboratory in the United States for a two-year post in 1964, in the Chemical Engineering Division.

Research at Argonne was focused on new ways to reprocess radiated fuels. Peter was able to transfer this technology back to AAEC on his return in 1966. He was made 'group leader' of half of the chemical engineering research into turning yellowcake into Uranium Dioxide powder. Following this, he became the leader of the Chemical Engineering section of AAEC, which he held from 1969 until 1974.

Peter's work at AAEC was linked to the nuclear fuel cycle, and the 'oil shock' of the early 1970's provoked great interest into the development of alternative fuels. In the late 1970's the government transferred nuclear fuel research from AAEC to CSIRO and Peter's division was transferred in 1981. Peter was quite happy with this change as he saw many opportunities for new research, such as using radioisotopes for medical purposes.

Following the transition to CSIRO, Peter continued to work at the Lucas Heights laboratories, adding to CSIRO's research with many developments into the area of liquid fuels. Peter predicts that the only way that nuclear power will become a possibility in Australia would be if the 'Greenhouse Effect' prompted the Government to impose greater penalties for Carbon Dioxide use, thus allowing alternative fuels a chance.

After moving to CSIRO, Peter set up a research program into the production of synthetic transport fuels and environmental research into air and water pollution and solar power. This research was terminated, as there was minimal interest into this energy form in the 1980's. While at CSIRO he was the Chief of the Division of Energy Chemistry between 1981 and 1990. The group completed much research into oil shale. He also accumulated the first comprehensive data on the emission of trace elements from coal combustion. Peter acted as an advisor for DITAC (Department of Industry, Technology and Commerce) though most of the eventual projects were unsuccessful. In 1990 the Division of Fuel Technology at Lucas Heights and the Division of Coal Technology at North Ryde were combined within CSIRO and Peter became Chief of the new Division of Coal and Energy Technology.

Peter retired from CSIRO in 1994 at the age of 56, because he wanted to be young enough to enjoy his retirement. In the time since then he has acted as a consultant for a number of research centres, as well as travelling and taking part in reviews. Over the years Peter has published more than seventy journal papers, conference papers and reports.

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Prepared by Patricia Taaffe, August 2002 from oral history interviews conducted on  
15 April 1999.